

Silicon Nitride Thermocouple Protection Tubes



Product ID / SKU: FWM/SN-TPT-001

Material: Silicon Nitride (Si_3N_4) - Gas Pressure Sintered (GPS) / High-density

Product type: Silicon Nitride Ceramics Family

Silicon nitride thermocouple protection tubes shield temperature sensors from molten aluminium while allowing heat to reach the sensing element.

Representative silicon nitride thermocouple protection tube configuration.

Si_3N_4 (N7000) Typical Properties

Property	N7000	Condition / method
Bulk density (g/cm^3)	3.22	-
Four-point bending strength (MPa)	800	Room temperature; four-point bending, 40/20 mm spans
Fracture toughness ($\text{MPa}\cdot\text{m}^{1/2}$)	6.7	-
Hardness (GPa)	15	DPH
Young's modulus (GPa)	290	Room temperature
Thermal conductivity ($\text{W}/(\text{m}\cdot\text{K})$)	20	Room temperature
Coefficient of thermal expansion ($10^{-6}/\text{K}$)	3.4	Room temperature-1000°C
Typical maximum material temperature ($^{\circ}\text{C}$)	1000	-
Weibull modulus	>15	Room temperature
Thermal shock coefficient R1 (K)	620	R1 coefficient